BY FRANCIS L. HIRT

New Light on Patterns of Output Growth

THIS article brings up to date the analysis of long-term production trends for over 300 products and services last analyzed in the May 1959 issue of the SURVEY OF CURRENT BUSINESS.

At the outset, it should be emphasized that the products considered here are illustrations of production patterns typifying cross-movements in a growth economy. Many new as well as old products are necessarily excluded because of lack of data or for other reasons. Such new lines as the expanding group of electronic components and parts, automation through use of computers, radar and microwave systems, missiles and guidance systems for missiles, atomic power plants and byproducts of atomic energy research are not covered. These and other developments taken together play an increasingly important role in the economy, and loom large in the field of technical progress and in the actual and potential growth of the economy.

On the basis of the products analyzed in this report, there has been some slowing down in the growth rates for a large number of new products as well as old. It is not surprising that so few products in the list presented in the table show progressive year-to-year gains. It is a distinctive feature of a dynamic economy that products that were once new and rapidly growing slow down in growth as markets become highly developed, while completely new products are constantly coming to the fore. Moreover, a fixed group of products encompassing a period as long as 13 years (1948–60) will tend to show a dwindling number of consistently growing items, since the very newest products were in the developmental stage in the early part of the period and data for them may not be available at all.

Furthermore, it should be pointed out that changes in production expressed in terms of physical units do not necessarily indicate for some products their full measure of growth. For example, the electric typewriter is more expensive than the standard type so that when value (unit times price) is taken into account, the growth rate for all typewriters combined would be higher than growth based solely on physical units. Similarly, the number of lawnmowers, measured in units, rose 50 percent from 1947 to 1958, but the real gain in production is far in excess of this since the average value at the factory level of a power mower is nearly four times that of the hand mower.

Basis of classification

The products are classified on the basis of output change since 1948 into three broad groups—fast growing, defined as those having an average rate of growth of 7½ percent or more per year; moderately growing, or those with growth rates up to 7½ percent per year; and the declining products. This basis for grouping products reflects of necessity an arbitrary judgment on our part. While the classifications are the same as used in previous articles, it should be noted that the base period for computing the growth rates has been shifted to 1948.

Table 1 lists the products in approximate order of magnitude of change in output and for ready reference also shows actual production data for 1948 and the most recent years.

For the products included in the table, and taking the entire period 1948–60 as a basis of measurement, one-fourth are fast growing, somewhat less than one-half are moderately growing, and the remainder are declining. These proportions differ from those shown in the previous review where the products were arranged on the basis of the longer term production trend; i.e., from 1929 through 1957.

On the basis of the 1948–60 output change, the number of products classified as fast and moderately growing was reduced, and the number in the declining category increased as compared with the long-term classification. This shift in position is traceable in part to the cyclical fluctuations in the more recent period, and partly to the selection of the year 1948 as the base period for the rate calculations. Basically, the review reflects conditions under high-level business activity marked by periodic readjustments.

Changing patterns of growth

The rapidly growing products have maintained a median rate of growth since 1955 of about 10 percent per year, compared with close to 15 percent in the earlier postwar period, when naturally the relative gains were more importantly influenced by the starting position.

Of the 70-odd items in the fast-growing group, 10 percent continued to show uninterrupted growth at a high rate—over 15 percent per year—from 1948 to 1960. Outstanding examples of these items include polyethylene, a material developed during World War II and now extensively used both by industry and consumers, and some of the more recently developed electronic components such as transistors, connectors, and rectifiers. In the case of polyethylene, output has expanded at an average annual rate of 40 percent since 1948, and for the past 5 years the rate was still in excess of 30 percent. For transistors, the production of which exceeded 1 million units for the first time in 1954, the growth rate was more rapid, as could be expected in the early period of production and marketing.

Even though the rate has decelerated from the earlier period, most of the items in the fast-growing group are still showing annual growth rates for the 1955–60 period of 7½ percent or more. Notable exceptions—though still decidedly growth products—are primary aluminum, a few chemical materials—nitric acid, urea and melamine resins, perchloroethylene—and

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NOTE.—The average annual rates of growth shown in the table below are based upon the change in output from 1948 to 1960 or from first year production data are available.

Table 1.—Production of Selected Products and Services, 1948, 1958–60

Rapidly Growing—Increases at an Average Annual Rate of 7½ Percent or More

Product or service	Unit of measure	Production 1948	1958	1959	1960
30 Percent and over					
Helicopter passenger-miles	Thous. miles	[2] 20	4,685	7,477	9,475
Transistors	Thous.	[4] 1,316	47,051	82,204	127,928
Heat pumps	Number	[2] 1,000	25,500	40,000	48,200
Titanium sponge	Tons	10	4,585	3,898	5,311
Air conditioners, automotive	Thous.	[4] 50	443	507	710
Polyethylene	Mil. lbs.	10	905	1,195	1,337
Power brakes	Thous.	[5] 114	1,203	1,573	1,059
Power steering	Thous.	[4] 200	1,617	2,236	2,853
20 to 30 Percent					
Dehumidifiers	Thous.	[4] 25	210	345	410
Air conditioners, room	Thous.	74	1,073	1,660	1,591
Argon	Mil. cu. ft.	30	377	470	570
Recorders, magnetic	Thous.	[4] 27	400	400	425
Air-conditioning systems, residential	Thous.	[2] 41	124	167	187
Rubber or latex core mattresses	Thous.	[4] 34	643	630	609
Carpets and rugs, tufted-type	Mil. sq. yds.	[6] 21	114	173	152
Driers	Thous.	92	1,204	1,582	1,239
Fibers, synthetic, ex. rayon	Mil. lbs.	76	594	793	896
Antibiotics	Thous. lbs.	240	2,032	2,295	2,709
Phonographs, single	Thous.	361	3,212	3,475	4,000
Fibers, synthetic, ex. rayon, consumption.	Mil. lbs.	72	571	781	701
Helium	Mil. cu. ft.	61	334	477	642
Lawnmowers, power	Thous.	397	3,453	4,290	3,800
Ironmaking capacities	Number	6,930	31,100	40,700	50,100
15 to 20 Percent					
DDT	Mil. lbs.	20	145	157	164
Coffee makers, automatic	Thous.	670	4,260	4,750	4,875
Picture tubes, sales	Thous.	1,208	8,262	9,523	9,014
Styrene plastics and resins	Mil. lbs.	165	702	977	1,002
Television sets, black and white	Thous.	975	4,020	6,349	5,708
Polyvinyls resins, plastics	Mil. lbs.	218	800	1,160	1,190
10 to 15 Percent					
Blankets, electric	Thous.	675	2,420	3,300	3,640
Phosphoric acid	Thous. sh. tons	432	1,709	1,881	2,080
Frozen foods	Mil. lbs.	1,347	5,085	5,948	6,441
Jet fuel	Mil. bbls.	[2] 30	74	83	90
Xylene	Mil. gals.	61	200	241	282
Vitamins	Thous. lbs.	2,506	9,703	10,645	11,003
Air revenue passenger-miles	Mil. miles	7,070	28,522	32,400	33,800
Plastics and resin materials	Mil. lbs.	1,480	4,089	6,021	6,140
Disposals, food	Thous.	175	610	758	700
Magnesium	Thous. sh. tons	10	30	31	40
Shavers	Thous.	1,050	6,400	6,150	5,900
Plasticizers	Mil. lbs.	148	418	530	912
Ethylene glycol	Thous. lbs.	307	1,145	1,315	1,200
Oxygen	Bil. cu. ft.	10	30	45	58
Ammonia, synthetic anhydrous	Thous. sh. tons	1,375	3,870	4,520	4,812
Skirts, separate	Mil.	85	80	101	123
Transparent films for packaging	Mil. lbs.	206	627	682	705
Automatic transmissions	Thous.	[4] 1,270	3,318	4,215	4,300
Aluminum, primary ingot	Thous. sh. tons	623	1,560	1,954	2,014
Paper milk containers	Mil cartons	5,014	14,800	15,900	16,000
Effervescent wines, withdrawals	Thous. wine gal.	1,008	2,502	3,001	3,380
Gasoline engines, ex. outboard, automotive, and aircraft.	Thous.	[4] 2,140	5,756	7,181	7,003
7½ to 10 Percent					
Perchloroethylene	Mil. lbs.	65	187	203	209
Pentaerythritol	Mil. lbs.	21	52	64	64
Air ton-miles flown	Mil. miles	223	570	640	674
Nitric acid	Thous. sh. tons	1,133	2,704	3,074	3,317
Rubber, synthetic, all types	Thous. lg. tons	465	1,059	1,380	1,430
Butadiene	Mil. gal.	661	1,405	1,616	1,850
Aircraft, civilian, airframe weight	Mil. lbs.	10	17	23	29
Chlorine gas	Thous. sh. tons	1,610	3,605	4,237	4,557
Formaldehyde	Mil. lbs.	617	1,358	1,750	1,808
Urea and melamine resins	Mil. lbs.	148	340	424	300
Vending machines	Thous.	[2] 428	471	524	644
Phenol, natural and synthetic	Mil. lbs.	207	505	692	773
Motor truck transportation	Bil. ton-miles	110	250	253	204
Electric power, total	Bil. kw.-hr.	337	724	795	890
Air-conditioning systems, commercial.	Thous.	30	81	99	104
Dishwashers, motor-driven	Thous.	225	425	447	550
Natural gas, marketed	Bil. cu. ft.	6,148	11,030	12,010	12,803
Aviation gasoline	Mil. bbls.	46	123	124	114
Benzene, chemical and motor grade.	Mil. gal.	184	287	317	450
Helicopters, nonmilitary	Number	71	168	170	172
Trousers, separate, dress and sport	Thous.	87,700	73,405	80,190	92,705
Merchant ship construction, deliveries.	Thous. gr. tons	104	673	717	404
Repairs, household durables	(1940=100)	351	607	723	795

See footnotes at end of table.

Moderately Growing—Increases at an Average Annual Rate of Less Than 7½ Percent

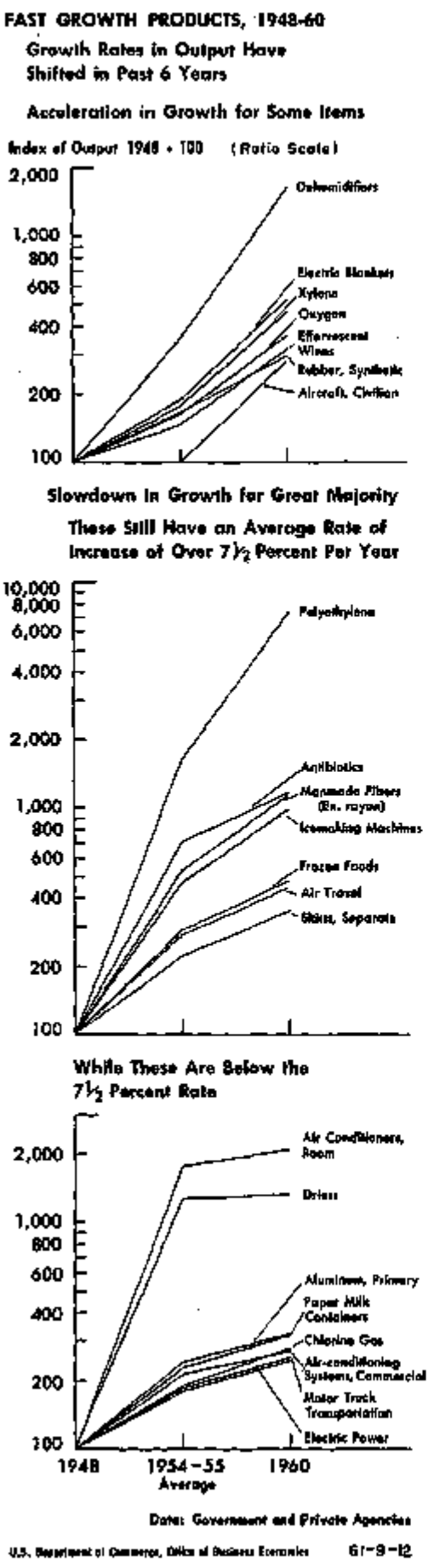
Product or service	Unit of measure	Production 1948	1958	1959	1960
6 to 7½ Percent					
Acetylene	Mil. cu. ft.	5,144	10,245	12,169	12,130
Phthalic anhydride	Mil. lbs.	169	301	358	374
Newsprint production	Thous. sh. tons	870	1,724	1,924	2,004
Hydrochloric acid	Thous. sh. tons	468	820	958	1,014
Garden tractors	Thous.	165	224	330	403
Sand and gravel	Mil. sh. tons	319	694	730	707
Glazed and unglazed floor and wall tile.	Mil. sq. ft.	104	222	250	225
Coumarone, indene and pet. polymers.	Mil. lbs.	135	208	318	285
Acetylsalicylic acid (Aspirin)	Thous. lbs.	11,018	20,810	18,007	22,553
Mixers, food, std. and portable	Thous.	1,570	2,714	2,080	3,279
Sodium hydroxide, liquid	Thous. sh. tons	2,317	3,093	4,077	4,586
Waists, blouses, and shirts	Mil.	84	170	188	193
Coats, separate, men's	Thous.	4,458	8,470	10,885	10,580
Methanol, synthetic	Mil. gals.	140	214	205	288
Woodpulp	Thous. sh. tons	12,872	21,700	24,393	25,310
Sulfa drugs	Thous. lbs.	2,000	3,720	5,635	6,068
Pipelines, oil	Bil. ton-miles	120	211	227	229
Asphalt	Mil. bbls.	52	89	97	90
Receiving tubes	Thous.	205	397	433	393
Pulpwood consumption	Thous. cords	21,180	35,248	33,400	40,485
5 Percent					
Oleomargarine	Mil. lbs.	908	1,673	1,611	1,695
Sanitary and tissue paper	Thous. sh. tons	1,184	1,946	2,125	2,217
Acetic acid	Mil. lbs.	422	550	670	706
Carbon dioxide	Thous. sh. tons	527	600	591	641
Natural and synthetic rubber, consumption.	Thous. lg. tons	1,060	1,357	1,623	1,616
Special industrial and absorbent paper.	Thous. sh. tons	416	642	752	758
Water heaters, gas	Thous.	1,600	2,073	2,451	2,402
Shipping containers	Bil. sq. ft.	42	97	110	108
Distillate fuel oil	Mil. bbls.	351	601	674	605
Passenger cars	Thous.	3,000	4,258	5,591	6,075
4 Percent					
Closures, commercial	Mil.	10,730	17,075	18,309	18,071
Ethyl alcohol	Mil. gals.	324	492	541	543
Wax, petroleum	Thous. bbls.	3,516	5,252	5,630	6,011
Trailer coaches, mobile home-type	Thous.	85	134	102	141
Paperboard, includ. wet machine board.	Thous. sh. tons	9,603	14,271	15,624	15,834
Work pants	Thous. doz.	3,400	5,539	6,101	5,400
Industrial trucks and tractors, electric, rider-type.	Thous.	3,429	3,808	4,023	5,040
Bag paper	Thous. sh. tons	700	1,053	1,158	1,247
Glass containers	Mil. gross	99	146	154	160
Salt	Thous. sh. tons	16,165	23,544	25,140	26,433
Motor fuel, all types	Mil. bbls.	922	1,400	1,448	1,487
Beef	Mil. lbs.	9,075	13,342	13,808	14,690
High industrial explosives	Mil. lbs.	680	810	867	984
Carbon black	Thous. sh. tons	648	822	984	1,036
Heating pads	Thous.	1,000	1,405	2,660	2,676
Distilled spirits, withdrawals	Mil. gals.	108	155	160	170
Tires, passenger car	Mil.	67	84	103	105
Paper and board, total	Thous. sh. tons	21,807	30,624	34,084	34,465
Freezers, farm and home	Thous.	690	1,104	1,206	1,043
Warm-air furnaces	Thous.	777	1,235	1,435	1,214
Gypsum wallboard, includ. lath	Mil. sq. ft.	6,036	7,200	8,426	7,745
Rayon and nylon tire cord	Mil. lbs.	251	380	430	300
Sulfuric acid	Thous. sh. tons	11,440	16,050	17,609	17,820
Fine paper	Thous. sh. tons	1,141	1,635	1,750	1,771
Cement, portland	Mil. bbls.	205	311	338	310
Canned fruits	Mil. lbs.	2,600	3,247	3,482	3,700
Book publications	No. of editions	9,897	13,462	14,424	15,012
Shipping sack paper	Thous. sh. tons	407	619	670	650
3 Percent					
Lamps, bulbs and tubes	Mil.	1,807	2,497	2,808	2,720
Printing paper	Thous. sh. tons	3,151	4,053	4,008	4,095
Cans, metal (expressed in terms of metal used).	Thous. sh. tons	3,246	4,701	4,049	4,801
Glycerine, refined	Mil. lbs.	107	222	270	201
Trailers, truck	Thous.	44	60	76	65
Concrete reinforcing bars	Thous. sh. tons	1,642	2,635	2,173	2,214
Fertilizers, commercial	Thous. sh. tons	17,600	24,172	26,420	25,226
Ethyl acetate	Mil. lbs.	92	84	101	87
Shirts, dress, sport, business, utility.	Thous. doz.	10,880	21,304	23,333	24,210
Superphosphate	Thous. sh. tons	1,990	2,381	2,010	2,080
Waterclosets	Thous.	3,406	4,681	5,235	4,742
Drinking fountains	Thous.	82	124	125	114
Copper, refinery (primary)	Thous. sh. tons	1,107	1,342	1,098	1,519
Innerspring mattresses, other than for cribs.	Thous.	[4] 6,224	8,400	8,907	8,002

Table 1.—Production of Selected Products and Services, 1948, 1958-60—Continued

Product or service	Unit of measure	Production 1948	1958	1959	1960
Moderately Growing—Increases at an Average Annual Rate of Less Than 7½ Percent—Continued					
2 Percent—Continued					
Newsprint consumption	Thous. sh. tons	4,010	4,960	5,335	5,682
Sugar, refined	Thous. sh. tons	6,971	9,165	8,443	8,653
Acetic anhydride	Mil. lbs	776	965	1,097	1,005
Calcined gypsum	Thous. sh. tons	6,249	8,123	9,209	8,511
Shower stalls	Thous	148	181	180	200
Cheese	Mil. lbs	1,098	1,300	1,383	1,476
Flush tanks, vitreous china	Thous	3,093	3,446	4,036	4,151
Canned vegetables (comm. pack)	Mil. lbs	6,917	8,384	7,003	8,012
Still wines, withdrawals	Mil. wine gal	110	143	144	148
Repairs, passenger cars and trucks	(1940=100)	262	316	340	306
Diesel and semidiesel engines	Thous	[a] 100	132	180	126
2 Percent					
Meats, total	Mil. lbs	21,350	25,747	27,472	28,317
Insulating board and hardboard	Thous. sh. tons	1,270	1,646	1,907	1,782
Cigarettes, production	Bil	387	470	490	507
Coarse paper	Thous. sh. tons	3,027	3,613	3,990	3,906
Aniline	Mil. lbs	92	101	130	129
Copper, mine	Thous. sh. tons	835	970	825	1,083
Bedsprings, total	Thous	[b] 5,605	7,111	7,779	7,375
Fabricated structural steel	Thous. sh. tons	2,718	3,604	2,904	3,436
Crude petroleum	Mil. bbls	2,020	2,449	2,575	2,575
Lavatories, total	Thous	3,302	3,677	4,435	4,187
Paint, varnish, and lacquer	Mil. gals	273	321	340	347
Sodium bichromate and chromate	Thous. sh. tons	96	98	121	122
Ice cream	Mil. lbs	2,731	3,164	3,360	3,343
Glazed and unglazed hollow face tile	Mil. brick equivalent	338	484	445	418
Exterior frames	Thous	4,317	6,247	7,118	5,845
Construction paper and board	Thous. sh. tons	2,592	3,065	3,360	3,211
Vitrified clay sewer pipe and fittings	Thous. sh. tons	1,433	1,772	1,073	1,858
Fans	Thous	3,706	4,070	4,485	4,872
Cigars, production	Mil	5,645	6,210	7,113	7,009
Shoes and slippers	Mil. prs	460	587	638	509
Oil burners, residential	Thous	420	827	483	510
Cast iron soil pipe and fittings	Mil. sh. tons	604	784	812	707
Tractors (used in construction industry)	Thous	40	47	68	49
Typewriters, std., including portables	Thous	1,173	1,215	1,273	1,160
0 to 2 Percent					
Pork, excluding lard	Mil. lbs	10,055	10,528	12,110	11,752
Lubricants	Thous. bbls	51,400	51,300	50,100	58,400
Brick, common and face	Mil. std. brick	5,707	6,459	7,258	6,481
Wastepaper, consumption	Thous. sh. tons	7,385	8,070	9,414	9,182
Lard	Mil. lbs	2,321	2,441	2,803	2,600
Pig iron	Mil. sh. tons	60	57	60	67
Steel ingots and steel for castings	Mil. sh. tons	89	85	93	90
Dresses, women's	Mil	227	243	257	254
Confectionery sales	Mil. lbs	2,473	2,821	2,929	3,003
Kerosene	Mil. bbls	122	116	111	135
Slab zinc, primary smelter	Thous. sh. tons	788	781	709	808
Reclaimed rubber, production	Thous. lg. tons	267	266	304	293
Cast iron pressure pipe and fittings	Mil. sh. tons	1,155	1,278	1,441	1,202
Finished steel products, total	Mil. sh. tons	66	60	69	71
Truck and bus tires	Mil	16	13	15	14
Dungarees and waistband overalls, and related items, men's	Thous. doz	4,700	4,003	4,842	5,000
Oak flooring	Mil. bd. ft	832	857	994	879
Slab zinc, consumption	Thous. sh. tons	818	918	950	801
Automotive replacement batteries	Thous	25,076	26,270	27,495	26,320
Hosiery, shipments, total	Mil. doz. prs	144	150	157	161
Bathtubs, total	Thous	1,948	2,101	2,403	2,030
Cleaning and dyeing	(1940=100)	247	251	257	261
Fermented malt liquor (beer)	Thous. bbls	91,291	89,011	90,974	91,548
Radios, including auto	Thous	16,500	12,577	15,523	17,127
Sodium silicate	Thous. sh. tons	481	478	514	489
Lamb and mutton	Mil. lbs	747	688	738	765
Domestic water systems	Thous	650	720	800	770
Sulfur, native	Thous. lg. tons	4,869	4,645	4,554	4,042
Irons	Thous	6,640	6,002	6,747	6,095
Pickup hay balers	Thous	49	71	63	49
Adding machines, electric and nonelectric	Thous	[c] 343	319	349	348
Showing Declining Trends					
Up to 2 Percent					
Calculating machines, elec. and nonelectric	Thous	[d] 123	99	112	122
Sodium carbonate (soda ash)	Thous. sh. tons	4,676	4,324	4,904	4,557
Vacuum cleaners	Thous	3,361	3,250	3,421	3,313
Creamery butter	Mil. lbs	1,604	1,511	1,440	1,470
Hardwood doors	Thous	3,800	4,308	4,013	3,783
Cotton broad-woven goods	Mil. linear yds	9,649	8,974	9,505	9,328
Copper, consumption	Thous. sh. tons	1,214	1,167	1,163	1,148
Lead, refined, produced from domestic and foreign ores	Thous. sh. tons	467	473	342	385
Ranges, electric includ. built-in	Thous	1,600	1,355	1,487	1,526
Raw cotton consumption	Mil. lbs	4,464	3,807	4,337	4,217
Lumber, total	Bil. bd. ft	37	33	37	34
Coats, trimmed and untrimmed, women's	Thous	26,674	23,411	24,835	23,700
Silk consumption	Thous. lbs	7,400	6,300	8,000	6,900
Rayon and acetate, consumption	Mil. lbs	1,150	1,127	1,253	1,056
Railroad revenue freight ton-miles	Bil. miles	641	555	570	585
Sheep and lamb skins	In thous. equivalent hides and skins	33,492	27,403	29,034	30,309
Showing Declining Trends—Continued					
Up to 2 Percent—Continued					
Methanol, natural	Thous. gal	2,300	1,910	2,123	2,162
Flour, wheat	Mil. lbs	142	126	127	126
Suits, men's	Thous	23,412	17,982	21,078	21,134
Tin consumption, primary and secondary	Thous. lg. tons	91	73	77	80
Lead consumption, primary and secondary	Thous. sh. tons	1,134	986	1,091	1,002
Trucks and buses	Thous	1,370	877	1,137	1,196
Floor and wall furnaces	Thous	830	406	473	401
Rayon and acetate production	Mil. lbs	1,124	900	1,097	969
Cattle hides and side kip	In thous. equivalent hides and skins	20,870	23,618	23,167	21,975
Work shirts	Thous. doz	4,648	3,811	3,881	3,670
Crowns	Mil. gross	333	303	323	379
Canned fruit juices	Mil. lbs	2,459	2,024	2,007	2,064
Textile bags, burlap	(1940-49=100)	109	93	98	90
Clocks	Thous	9,006	7,450	8,100	8,200
Aircraft engines, civilian	Thous. h.p	3,700	3,450	2,513	2,284
Washing machines, elec. and gas	Thous	4,106	3,770	3,960	3,381
3 percent					
Veal	Mil. lbs	1,423	1,180	1,010	1,108
Iron ore	Thous. lg. tons	101	68	60	88
Steel barrels and drums, heavy type	Mil	27	22	23	21
Kitchen sinks, total	Thous	2,711	2,130	2,290	2,007
Cast-iron boilers (round and square)	Mil. lbs	303	216	246	191
Toasters	Thous	4,890	3,300	3,774	3,556
Manufactured tobacco	Mil. lbs	245	180	170	178
Refrigerators, electric	Thous	4,760	3,117	3,786	3,475
Overcoats and topcoats, men's	Thous	6,199	4,870	6,008	4,303
Residual fuel oil	Mil. bbls	440	383	348	390
Condensed and evaporated milk	Mil. lbs	3,765	2,751	2,740	2,402
3 to 4 percent					
Zinc, mine	Thous. sh. tons	630	412	425	432
Bituminous coal	Mil. sh. tons	600	410	412	413
Machine tools, metal cutting-type	Thous	50,000	27,300	33,900	34,000
Open sash	Thous	11,830	9,432	11,040	7,638
Suits, women's	Thous	14,003	8,100	9,681	9,404
Cooking stoves, gas, domestic	Thous	2,700	1,807	2,012	1,810
Water heaters, electric	Thous	1,040	824	783	715
Creosote oil	Mil. gals	145	105	90	93
Lead, mine	Thous. sh. tons	390	267	254	244
Calf and kid skins	In thous. equivalent hides and skins	10,490	8,002	6,573	6,382
Inner tubes, passenger, truck, and bus	Mil	70	41	40	41
Wool consumption, apparel and carpet	Mil. lbs	693	331	420	404
Woolen and worsted woven goods	Mil. linear yds	468	271	311	283
Carpets and rugs, wool type	Mil. sq. yds	90	51	60	54
4 percent and over					
Power sprayers and dusters	Thous	131	83	96	73
Railroad revenue passenger-miles	Mil. miles	41,200	23,200	22,100	21,400
Asphalt board products	Thous. sq. ft	31,653	17,416	18,713	16,220
Railroad freight cars	Thous	115	44	38	57
Goat and kid skins	In thous. equivalent hides and skins	37,970	10,002	22,707	18,008
Milking machines	Thous	62	33	30	28
Ponderosa pine doors	Thous	4,091	1,830	2,474	1,148
Maple, beech, and birch flooring	Mil. bd. ft	75	40	40	36
Feature movies	Number	335	240	190	170
Local transit, passengers carried	Mil	17,312	7,778	7,050	7,481
Textile bags, cotton	(1940-49=100)	98	28	29	27
Structural clay tile	Thous. sh. tons	1,271	543	521	495
Phonographs, radio-phonograph combinations	Thous	2,229	760	820	942
Wire nails and staples	Thous. sh. tons	890	418	302	320
Heating stoves, domestic	Thous	5,227	2,302	2,204	1,907
Combines (harvester-threshers)	Thous	91	47	43	30
Rails and accessories	Mil. sh. tons	3,517	960	1,180	1,306
Anthracite	Mil. sh. tons	57	21	21	19
Tractors, wheel-type, exc. off-highway and garden-type	Thous	530	230	232	161
Cornpickers, field	Thous	78	35	35	27
Radiators and convectors	Mil. sq. ft	60	22	24	19
Tractor moldboard plows	Thous	328	109	110	110
Asphalt sidings	Thous. squares	3,290	1,040	986	871
Overdrives	Thous	651	137	223	185
Range boilers	Thous	530	158	128	103
Locomotives, electric	Number	8	0	0	0
Railroad passenger cars	Number	940	130	70	243
Space heaters, oil	Thous	1,245	244	238	231
Mechanical stokers	Thous	50	10	18	15
Locomotives, diesel-electric	Number	2,264	434	812	380
Locomotives, steam	Number	50	0	0	0
Tire cord, cotton	Mil. lbs	285	39	40	24
Black blasting powder	Mil. lbs	33	2	2	2
Droners	Thous	477	35	40	35

a Data are for 1953. b Data are for 1954. c Data are for 1952. d Data are for 1949. e Data are for 1947. f Data are for 1951. g Data are for 1955.

Source: U.S. Department of Commerce, Office of Business Economics, based upon data obtained from private and Government sources.



transparent film for packaging among manufactured commodities, and motor-truck transportation and electric power among the services.

Some items that have shown large production gains from 1948 to 1960 have reached the leveling stage in the past 5 years. Production of television receivers is a case in point, and an illustration of a growth curve. Following the year of introduction in 1947, the number of television sets produced reached an early peak in 1950; it was not exceeded in number again until 1955 and then by a slight margin. In each of the past 5 years, the number of TV sets turned out was below the record 1955 volume, and substantially below in most of these years. Clothes driers, room air conditioners, farm and home freezers, and sulfa drugs are other commodities typical of this production pattern. However, in only a few cases—diesel-electric locomotives for example—has the production curve shown a positive downward trend from the strong initial upsurge.

Acceleration in some products

Illustrations of products are given in the top panel of the chart where growth rates have expanded since the mid-fifties. The accelerated rates of output in these cases are associated for the most part with product improvement and the development of new and more efficient uses for old lines.

Examples of these are oxygen, reflecting the expanding use in the production of steel ingots; synthetic rubber, an outstanding World War II product development and still undergoing further product improvement; and effervescent wines, the increasingly popular domestic-made champagnes and sparkling wines.

The steel industry is the largest user of oxygen. It is also consumed in large quantities in missile systems, in the production of many chemicals, and in other industrial products. The application of oxygen in the production of raw steel became especially significant in the midfifties. The use of oxygen per ton of raw steel produced has increased to 500 cubic feet in 1960 from less than 200 cubic feet in 1955. In the past 5 years, total output of oxygen has nearly doubled, from less than 30 billion cubic feet to 56 billion last year.

In the case of synthetic rubber, production and consumption have been increasing steadily relative to natural rubber. Last year, domestic use of all types of synthetic rubber accounted for approximately 70 percent of total consumption; in 1955, the proportion was less than 60 percent. A part of the expansion has resulted from the recent development of newer and improved types of synthetic rubber, such as the stereo grades. Here new planned capacity includes the construction of additional facilities with a rated capacity of 200,000 long tons for the production of the stereo-type synthetic rubber alone; this is already or will be under construction before the end of this year.

Relation of growth products to business cycles

In the recent business downturn which extended into the early months of this year, production rates were reduced from earlier highs throughout manufacturing and mining industries. Because of the generally high volume in the first 9 months of 1960, for the year as a whole, output of most products averaged higher than in 1959.

Before the end of the first quarter of this year, a firming tendency was in evidence and in April total industrial production turned upward and by July surpassed the previous high reached early in 1960. Of all the recoveries following postwar recessions, this was the briefest period by a wide margin in which an earlier production peak was overtaken.

All of the major industry groups shared in the recovery, though unevenly, and most registered rapid and appreciable advances. By July, new output peaks were registered for 9 of the 23 major product groups comprising the Federal Reserve production index. For many individual products, output gains from the low recession levels were likewise substantial.

Table 2 shows the direction of output changes for 280 identical products and services during the postwar recession periods. The items are arranged into the three broad classifications of fast, mod-

Table 2.—Direction of Output Changes for 280 Identical Products and Services During Postwar Recession Periods

Group	1948–49	1953–54	1957–58	1959–60
87 Fast Growing Products[1]				
Increases	41	43	33	42
Decreases	16	14	25	15
Median, percent change	9.9	4.3	1.4	4.2
133 Moderately Growing Products[1]				
Increases	44	68	54	74
Decreases	89	65	79	58
Median, percent change	−2.5	−0.4	−2.4	1.0
60 Declining Products[1]				
Increases	15	23	17	23
Decreases	76	68	74	68
Median, percent change	−14.5	−7.4	−9.5	−6.9
280 Products				
Increases	100	129	102	139
Decreases	180	151	177	141
Median, percent change	−5.0	−1.6	−4.0	−2.0
Industrial Production, percent change	−5.5	−5.5	−7.1	3.9

1. Based upon changes in output from 1948 to 1960.

erately growing, and declining groups, based on output changes from 1948 to 1960, and median percent changes have been calculated.

The declining products show the largest percentage decrease in each period; the fast growing products show an increase in each period; and the largest group, "moderately growing," falls in between. It may be noted, however, that the average increase in the fast group showed a progressive decline from 1948–49 to 1957–58. The reversal of this pattern in 1959–60 may be taken as an indication of the mildness of the 1960 recession. It may also be seen that in the first three recessions, the moderately growing group has never shown a positive average. There is no evidence of a progressive deterioration in the decreasing group, though this may be a characteristic of the different demand patterns in each of the periods.

As a related aspect of the above, we can see a diversity of recession changes within each of the groups. The fast growing group does not show increases for all products though increases predominate, and the declining group contains products that increased, though these are in the minority.

Relatively few products show consistent output gains from year to year, and of those in this group that do, not all are new items though all are classified as fast growing. Of the 280 items covered, only 15 show this behavior. In most cases the recession changes, except during the first postwar adjustment period, have generally been below the long-term rate.

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Year of peak output

Table 3 provides another way of viewing the production changes of the 300 items by focusing on the years of peak output. Not only do some rapidly growing products decline in recessions, as was indicated above, but some fail to regain earlier peaks. Of the 70 items in the fast growing group, for example, peak output was reached by 14 items in the boom years of 1955–57. Of the moderately growing group, 10 percent had reached peaks prior to 1955, and an additional 28 percent hit their highs in the 1955–57 period. It was during this period that business undertook its largest postwar expansion of capital facilities. Moreover, the fact that over half of the 300 items reached output peaks at some time prior to 1958 is indicative of the excess capacity that has existed in many lines since the 1958 recession and may be a major explanation of the failure of investment since then to attain the high rates of 1957.

Impact of new products on established lines

An important factor contributing to the growth of manufacturing production over the long term has been the continual development through research of a wide range of new products for industrial and consumer use. This has been particularly true since the end of World War II when newly developed products entered the market with increasing frequency.

Some of these new products are substitutes and either compete directly with or ultimately replace established lines. Thus, manmade fibers are directly competitive with agricultural products such as cotton, wool, and silk, while diesel-electric locomotives have completely replaced steam locomotives. Improved efficiency, better quality, broader usage, and cost considerations are among the major factors in market acceptance of the new relative to the regular line products.

The introduction of the new or competing product has been accompanied by an expansion in output and an increasing share of the combined production of both new and old products

Table 3.—Distribution of Peak Years of Production for 304 Products, by Years, 1948–60

	Prior to 1955	1955	1956	1957	1958	1959	1960	Total
Fast	1	3	5	6	1	8	46	70
Moderate	14	10	10	4	....	29	63	142
Declining	78	4	7	3	....	....	....	92
Total	93	26	28	13	1	37	109	304

In a number of instances, production of the newer product in 1960 accounted for 70 percent or more of the aggregate output, and in a few cases the share exceeded 90 percent.

The effect of the additional output on the combined product, however, has not been uniform. In some cases, the enlarged production has contributed to expansion while in others it has merely helped to maintain output.

In textiles, the very rapid postwar growth of synthetic fibers has been at the expense of the natural fibers, consumption of which has been declining since the early war years. As a result of these offsetting movements, aggregate fiber consumption in physical terms has shown relatively little change since the early 1940's.

Not all types of the manmade fibers are in an expansionary phase; the use of cellulosic rayon and acetate has been moving downward since 1955, while the relatively newer noncellulosic fibers as a group have shown consistent strength throughout the postwar period and now account for more than two-fifths of the manmade total; as recently as 1955, the proportion was less than one-fourth, and in 1948 it was below 6 percent. Since 1945, the use of all fibers has averaged about 6.4 billion pounds per year; 1960 usage amounted to 6.5 billion pounds.

By way of contrast, total demand for fruits and juices has continued to expand as the new frozen products moved strongly upward and have accounted for roughly all of the growth in the overall total in the postwar years. Power lawnmowers have made sharp inroads on the hand mower market, but their growth has more than offset the decline in the hand type. Much the same general market experience occurred for synthetic relative to natural rubber consumption.